

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-3 and 9-14 are pending in the present application and Claims 4-8 are withdrawn. Claims 1-3 are amended and Claims 9-14 are added by the present amendment.

In the outstanding Office Action, Claim 2 was rejected under 35 U.S.C. § 112, second paragraph; Claim 1 was rejected under 35 U.S.C. § 102(b) as anticipated by Japanese Patent No. 7-311316 to Yoshida et al. (hereinafter "Yoshida"); and Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as unpatentable over Japanese Patent No. 7-311316.

Regarding the provisional election of Group 1, Claims 1-3, made on August 21, 2003 via telephone, Applicants affirm that election.

Regarding the rejection of Claim 2 under § 112, second paragraph, that claim is amended in view of the Examiner's comments. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Claim 1 stands rejected under § 102(b) as anticipated by Yoshida. That rejection is respectfully traversed.

Amended Claim 1 is directed to a method of forming a coating on an optical fiber. The method includes:

setting a coating forming portion of the optical fiber in a mold;

injecting a light-curing resin into the mold;

heating and monitoring the mold in order to heat the light-curing resin up to a glass transition temperature thereof; and

irradiating the light-curing resin, which has been heated up to the glass transition temperature, with a light in order to cure the light-curing resin.¹

By way of background, methods are known for recoating the spliced portions of optical fibers with a UV resin. Conventionally, the resin is heated to improve its viscosity (*i.e.*, flowability), injected into a mold housing the fiber, and cured by light.² Because the speed at which fibers are spliced has recently increased, there is a corresponding need for faster recoating methods.³ The claimed invention is provided, in part, in view of that need.⁴

The present inventors have determined that irradiating the above-noted resin at its glass transition temperature increases the curing rate of the resin,⁵ while irradiating the resin at a temperature only slightly higher than ordinary temperatures does not sufficiently increase the curing rate.⁶ Thus, Claim 1 recites, *inter alia*, irradiating the claimed resin while heated up to the glass transition temperature thereof.

The outstanding Office Action does not address the patentability of heating a resin to its glass transition temperature; nor does it address the patentability of irradiating a resin while at that temperature.⁷ Further, Applicants note that Yoshida teaches away from heating a resin to its glass temperature, stating that the viscosity becomes too great at 60 °C and should therefore be maintained from 30 °C to about 60 °C to avoid hardening.⁸

¹ Support for the amendment of Claim 1 is self-evident from that claim as originally filed.

² Specification, page 5, lines 11-17.

³ Specification, page 6, lines 12-14.

⁴ Specification, page 6, lines 14-17.

⁵ Specification, page 8, lines 3-13.

⁶ Specification, page 6, lines 4-7.

⁷ Office Action, 12/16/2003, pages 3-5.

⁸ Yoshida, para. 34.

Accordingly, as Yoshida does not teach the step of irradiating a resin heated up to its glass transition temperature, Applicants respectfully request that the rejection of Claims 1-3, as anticipated by or unpatentable over Yoshida, be withdrawn.

New Claims 9-12 are added to set forth the present invention in a varying scope. More particularly, new independent Claim 9 is similar to Claim 1, but adds the step of heating and monitoring a unit configured to store and inject the light-curing resin in order to heat the light-curing resin up to a temperature enhancing the flowability thereof and replaces “glass transition temperature” with “predetermined temperature”; new dependent Claim 10 recites the further step of, during injection, heating and monitoring the mold in order to heat the mold to the temperature for enhancing flowability of the light-curing resin; new dependent Claim 11 clarifies that the predetermined temperature is the glass transition temperature of the light-curing resin; and new dependent Claim 12 clarifies the structure and operation of the unit configured to store and inject the light-curing resin.

By way of background, the temperature difference between a heated resin and a respective mold can cause the viscosity of the resin to change during injection, which in turn can lead to the formation of bubbles in the resin.⁹ Thus, there is a need for a recoating method that provides a resin and mold having similar temperatures during injection.

In a non-limiting example, Figure 4 illustrates an embodiment of the claimed invention. As shown, a tank 32, pump 29, tube 26, and mold 10 are each provided with heaters 33, 30, 27, 11 and temperature sensors 34, 31, 28, 12, respectively.¹⁰ By this configuration, the system may be regulated such that the resin within the tank 32,

⁹ Specification, page 6, lines 11-14.

¹⁰ Specification, page 12, lines ; page 6, line 21 – page 7, line 3.

pump 29, and tube 26 is of the same temperature as the mold during injection.¹¹

Thus, bubbles are prevented from forming in the resin.¹²

The outstanding Office Action does not address the patentability of the features of Claims 9-12.¹³ Moreover, Yoshida does not teach any of those features. Consequently, Yoshida teaches a step of “discharging the air bubbles” from the resin before curing.¹⁴ Accordingly, Applicants respectfully submit that new Claims 9-12 are distinguished over Yoshida.

New Claims 13-15 are also added to set forth the present invention in a varying scope. More particularly, new Claims 13-15 are similar to new Claims 9-11, but recite the unit configured to store and inject the resin in means-plus-function terminology. For at least the reasons stated above, new Claims 13-15 are believed to distinguish over Yoshida.

¹¹ Specification, page 13, lines 11-21.

¹² Specification, page 14, lines 19-24.

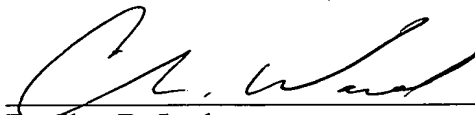
¹³ Office Action, 12/16/2003, page 4.

¹⁴ See Yoshida, Claim 1.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance, and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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